

# Use manual

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## System controller

for modulating absorption methane condensing heat pump  
+ renewable aerothermal energy K18



Revision: A

Code: D-LBR808

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## I INTRODUCTION



### Use manual

This "User Handbook" is a guide to the use and configuration of the K18 system controller. The system controller consists of an electrical enclosure (CSK18), generally installed in a machine room, with an included room unit, and at most two other optional room units which can be added to improve comfort control when the heating system consists of two or three separate heating circuits, or two or three zone valves.



This handbook assumes that you are familiar with the products Robur and information contained in the equipment's respective installation, user and maintenance manuals.

- ▶ for end users for the operation of the appliance according to their own requirements;
- ▶ for installers of the water and electrical circuits, as a supplement to the K18 system controller installation manual (and the KECSK18 system controller expansion kit installation manual, if applicable).

## I.2 REFERENCES

Further information can be found in the following documents:



K18 system controller installation manual.



KECSK18 system controller for K18 expansion kit installation manual.



Installation, use and maintenance manual of the specific K18 unit model used.

## I.1 RECIPIENTS

This manual is specifically intended for:

## II SYMBOLS AND DEFINITIONS

### II.1 KEY TO SYMBOLS



DANGER



WARNING



NOTE



PROCEDURE



REFERENCE (to other document)

### II.2 TERMS AND DEFINITIONS

DHW = domestic hot water.

HC = heating circuit

HC1 or C1 = Heating circuit 1 (with or without mixing valve), or zone 1.

HC2 or C2 = Heating circuit 2 (with or without mixing valve), or zone 2.

HC3 or C3 = Heating circuit 3 (without mixing valve), or zone 3.

CSK18 = System controller for K18 installed in the provided enclosure.

Siemens QAA75.611 = advanced room unit.

Siemens QAA55.110 = base room unit.

Appliance / Unit K18 = equivalent terms, both used to refer to K18 Simplygas or K18 Hybrigas unit type.

Auxiliary boiler = equipment (e.g. boiler) for the production of heat for space heating and/or DHW, able to integrate or replace the heat pump of the K18 unit. It is always found in the K18 Hybrigas type of unit and consists of an integrated boiler module, whereas it is optional in K18 Simplygas units, not necessarily supplied by Robur, and connected to the plumbing system outside the unit.

TAC = Technical Assistance Centre authorised by Robur.

## III WARNINGS

This manual is an integral and essential part of the product and must be delivered to the user together with the appliance.

### III.1 SAFETY



The appliance must only be used for the purposes for which it has been designed. Any other use is considered inappropriate and therefore dangerous. The manufacturer does not accept any contractual or extra-contractual liability for any damage caused by improper use of the appliance.



Failure to observe the above instructions can compromise the safety of the appliance and voids the Robur warranty.



Do not operate the appliance if any dangers are present: mains power problems; parts of the appliance flooded or damaged in any way; control and safety equipment tampered with or malfunctioning. In these cases, contact a professional technician for assistance.



Packaging (plastic bags, polystyrene foam, etc.) must be kept out of the reach of children, as they are potentially

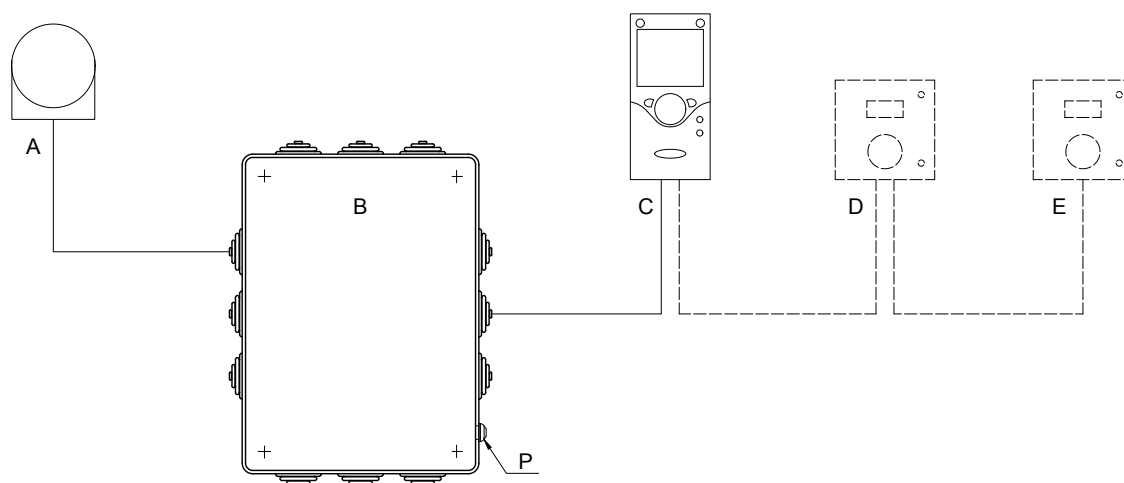


dangerous.

## 1 GENERAL INFORMATION

Fig. 1.1 p. 6 shows the equipment of the K18 system controller.

**Figure 1.1** K18 system controller components

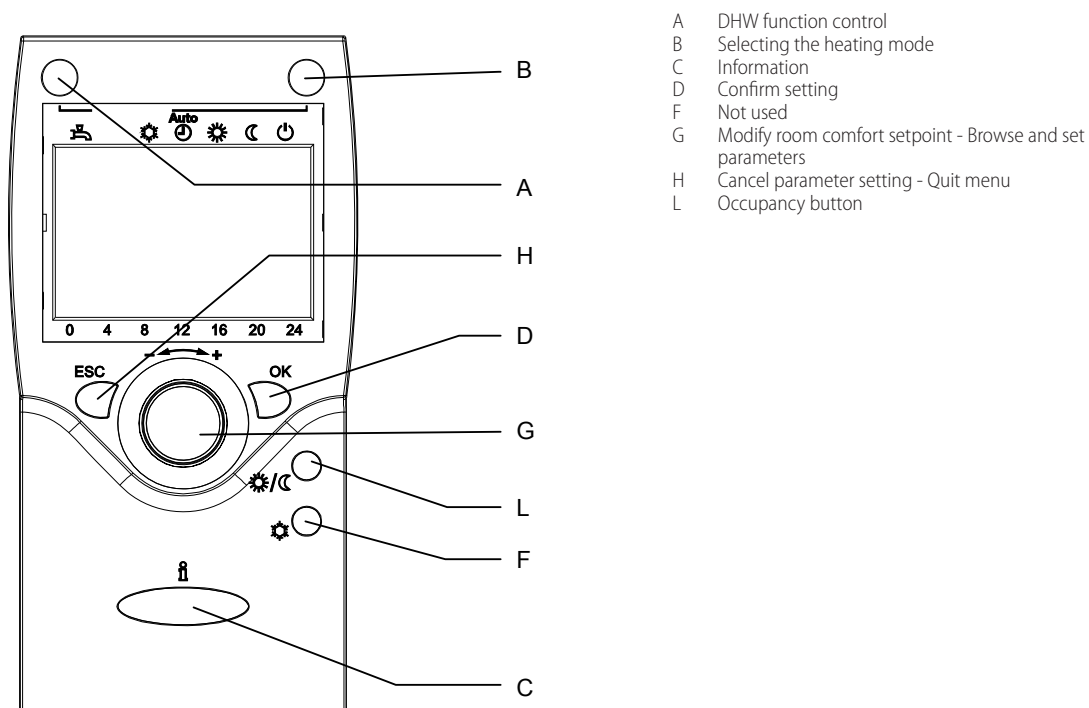


- A QAC34 ambient temperature probe
- B CSK18 enclosure
- C Room unit 1 (QAA75.611)
- D Room unit 2 (Optional - QAA55.110, shown, or QAA75.611)
- E Room unit 3 (Optional - QAA55.110, shown, or QAA75.611)
- P K18 fault reset button

## 2 USER INSTRUCTIONS: QAA75.611 ADVANCED ROOM UNIT

### 2.1 LEGEND OF COMMANDS

**Figure 2.1** QAA75.611 room unit - Description of QAA75.611 room unit controls

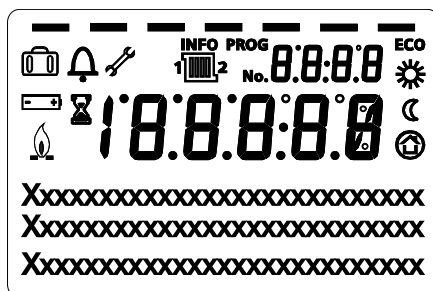


## 2.2 DISPLAY SYMBOLS

**Table 2.1** Symbols shown on the display

|             |   |
|-------------|---|
|             | Current heating mode: Comfort setpoint  |
|             | Current heating mode: Reduced setpoint  |
|             | Current heating mode: Anti-icing protection setpoint  |
|             | Processing – please wait  |
|             | Holiday program active  |
|             | Indicates that the data on the display refer to heating circuit 1, 2 or 3, depending on the digit to the left or right of the symbol. |
|             | Special mode / Maintenance  |
|             | Error message   |
|             | Protection mode   |
| <b>INFO</b> | Info level active   |
| <b>PROG</b> | Programming active  |
| <b>ECO</b>  | Heating system inactive, summer mode  |
|             | Indicates that the heat pump is running   |
|             | Indicates that the supplementary heater (e.g. a boiler) is running  |

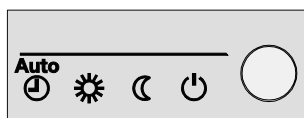
**Figure 2.2** QAA75.611 Display



When it powers on, the display shows all segments for a few seconds.

## 2.3 SELECTING THE HEATING MODE

**Figure 2.3** Heating mode selection



Press, multiple times if necessary, key B (fig. 2.1 p. 6) to select the heating mode. The selected mode displays with a hyphen under the respective symbol.



If multiple heating circuits are present (two or three), configured with a single room unit (factory setting), when you first press the button you are prompted to

select which circuit you wish to configure; if so:

1. Turn knob G (fig. 2.1 p. 6) to select heating circuit 1, 2 or 3.
2. Press **OK** (D in fig. 2.1 p. 6) to confirm.
3. Press, multiple times if necessary, key B (fig. 2.1 p. 6) to set the heating mode.

### Automatic mode

Automatic mode **AUTO** (🕒) maintains the room temperature at the comfort or reduced level, depending on the time program. Characteristics of automatic mode:


- Comfort or reduced heating mode, depending on time programming.
- Anti-icing protection functions active.
- Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.
- Current heating mode (depending on time program): Comfort
- Current heating mode (depending on time program): Reduced

### Comfort or reduced continuous mode

Continuous mode always maintains the comfort or reduced room temperature.

- Comfort mode heating
  - Reduced mode heating
- Characteristics of continuous mode:
- Constant heating mode, does not follow the time programming.
  - Anti-icing protection functions active.
  - Continuous operation in **Comfort mode**: automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit **disabled** (i.e. heating remains active, the said functions have no effect).

### Antifreeze protection mode

Protection mode  maintains the room temperature at the (configurable) Antifreeze protection level.

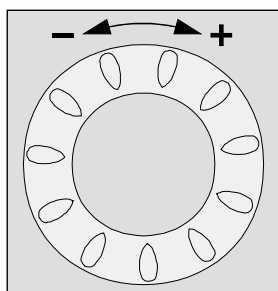
Characteristics of protection mode:

- ▶ Constant heating mode at the anti-icing protection setpoint.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.

## 2.4 MODIFYING THE ROOM TEMPERATURE SETPOINT

Knob G (fig. 2.1 p. 6).

Figure 2.4 Knob



### Modifying the comfort setpoint


To change the Comfort setpoint  turn the knob to increase the setpoint (CW) or reduce it (CCW). Confirm by pressing **OK**.



If multiple heating circuits are present (two or three), configured with a single room unit (factory setting), when you first turn the knob you are prompted to select which circuit you wish to configure; if so:

1. Turn the knob to select heating circuit 1, 2 or 3.
2. Press **OK** to confirm.
3. Turn the knob to set the setpoint value.
4. Press **OK** to confirm.

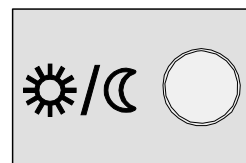
### Modifying the reduced setpoint

The reduced setpoint  can only be adjusted in programming mode. Proceed as follows. For further information, refer to section 4 p. 11.

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK**.
3. Turn the knob to select the "**Heating circuit 1**", "**Heating circuit 2**" or "**Heating circuit 3**" menu, depending on which circuit you want to configure.
4. Press **OK**.
5. Turn the knob clockwise to select "**Reduced setpoint**".
6. Press **OK**.
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. Press **ESC** twice to go back to the start screen.

## 2.5 OCCUPANCY BUTTON

Figure 2.5 Occupancy button



If, during heating in comfort mode, the rooms are unoccupied for a period of time, you can press the occupancy key L (fig. 2.1 p. 6) to switch to reduced mode and save heating costs.

When the rooms are occupied again, simply press the key once more to restore normal comfort mode heating.

In the same way, press the key once when in reduced mode to switch to comfort mode and press it again to restore reduced mode.



The occupancy key is only active in **automatic mode**. The setting applied by pressing the occupancy key remains active until the next change in heating mode set in the time program. For example, if you press the occupancy key while the system is in comfort mode, thus switching to reduced mode, the system will automatically return to comfort mode the next time the time program switches from reduced to comfort mode.

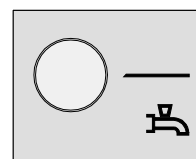



If multiple heating circuits (two or three) are present, configured to a single room unit (factory setting), the occupancy key effects all circuits.

## 2.6 SELECTING THE DHW MODE

### DHW mode

Figure 2.6 DHW function control



Press key A (fig. 2.1 p. 6), multiple times if necessary, to set activation (two modes) or deactivation of the DHW production system. System activation is indicated on the display by one or two hyphens under the  symbol.

- ▶ **On** (two hyphens): the system produces DHW at the DHW comfort setpoint, over the 24 hours or during the periods set in the DHW time program, if active; in the latter case, DHW is held at the DHW reduced setpoint for the remainder of the time.
- ▶ **Eco On** (one hyphen): the system produces DHW at the DHW reduced setpoint over the 24 hours.
- ▶ **Off** (no hyphen): the system does not produce DHW, but the anti-icing protection function for the buffer tank is active.

### DHW forced charging function

This function forces a single charging cycle to prepare DHW at the DHW comfort setpoint.

The function can be activated independently of the DHW mode



setting.

To activate the function, press and **hold down** the DHW mode button until the message **DHW charging on** displays temporarily to confirm initiation of the charging cycle.



Activating this function does not modify the DHW mode setting; when the single charging cycle terminates, the current DHW mode resumes.

## 2.7 INFORMATION DISPLAY

**Figure 2.7** Information



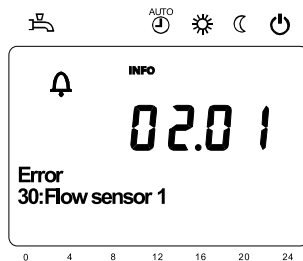
Pressing the **Info** key ( ) (C in fig. 2.1 p. 6) starting from the start screen, displays the system's status and operating data.



If you are not sure that the display is showing the start screen, press **ESC** twice before pressing **Info** ( ).

If the system has a fault, as indicated by the symbol on the start screen, the first data displayed when you press **Info** ( ) is the fault code and description (fig. 2.8 p. 9).

**Figure 2.8** Fault code and description in the Information screen



If a fault is present, refer to SECTION 5 p. 17.

Pressing **Info** ( ) repeatedly displays:

- ▶ Room temperature read by room unit 1
- ▶ Room temperature read by room unit 2 (if present)
- ▶ Room temperature read by room unit 3 (if present)
- ▶ Heat pump status
- ▶ Supplementary heater status (auxiliary boiler)
- ▶ DHW status
- ▶ Heating circuit 1 status
- ▶ Heating circuit 2 status
- ▶ Heating circuit 3 status
- ▶ External temperature
- ▶ Heating circuit 1 room setpoint
- ▶ Heating circuit 1 outlet temperature / heating circuit 1 outlet setpoint 1 (1)
- ▶ Heating circuit 2 room setpoint, if present
- ▶ Heating circuit 2 outlet temperature / heating circuit 2 outlet setpoint, if present (1)
- ▶ Heating circuit 3 room setpoint, if present
- ▶ Heating circuit 3 outlet setpoint, if present (1)
- ▶ DHW tank temperature, if present
- ▶ Stage 1 Off remaining min. (not used in the application, indicated with - -)
- ▶ Stage 1 On remaining min. (not used in the application, indicated with - -)

(1) **The circuit 1 and 2 outlet temperature is indicated only if the circuits are of the mixed type; circuit 3 is always of the not mixed type.**

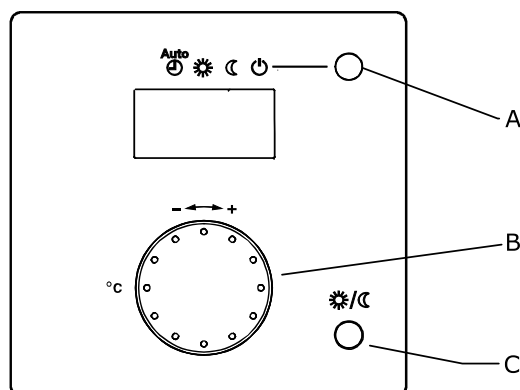
**The outlet setpoint only displays if the circuit is requesting heat.**

Continuing to press **Info** ( ) cycles through the data. To return to the start screen, press **ESC**.

## 3 USER INSTRUCTIONS: QAA55.110 BASIC ROOM UNIT

### 3.1 LEGEND OF COMMANDS

**Figure 3.1** QAA55.110 room unit - Description of QAA55.110 room unit keys



- A Heating mode selection / Confirm settings
- B Modify room comfort setpoint
- C Occupancy button

### 3.2 DISPLAY SYMBOLS

**Table 3.1** Display symbols

|  |  |
|--|--|
|  | Current heating mode: Comfort setpoint |
|  | Current heating mode: Reduced setpoint |
|  | Error message                          |

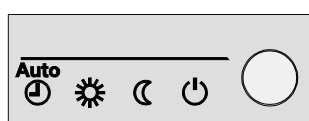
**Figure 3.2** QAA55.110 Display



When it powers on, the display shows all segments for a few seconds.

### 3.3 SELECTING THE HEATING MODE

**Figure 3.3** Heating mode selection



Press, multiple times if necessary, key A (fig. 3.1 p. 10) to select the heating mode. The selected mode displays with a hyphen under the respective symbol.



In contrast with the QAA75.611 room unit, the QAA55.110 unit is always associated with a single heating circuit and hence its settings apply only to that circuit. In the K18 system controller, this type of room unit is optionally used to control the second and third heating circuit (if present); in this case, the included QAA75.611 room unit is associated only with the first heating circuit during installation and commissioning. It follows that in this case the direct settings (i.e. those not made in programming mode) described in par. 2.3 p. 7, 2.4 p. 8 and 2.5 p. 8 apply solely to the first heating circuit.

However, you can also change all settings for the second and third heating circuits with the included QAA75.611 room unit **in programming mode**.



#### Automatic mode

Automatic mode maintains the room temperature at the comfort or reduced level, depending on the time program. Characteristics of automatic mode:

- Comfort or reduced heating mode, depending on time programming.
- Anti-icing protection functions active.
- Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.
- Current heating mode (depending on time program): Comfort
- Current heating mode (depending on time program): Reduced

### Comfort or reduced continuous mode

Continuous mode always maintains the comfort or reduced room temperature


- ▶  Comfort mode heating
- ▶  Reduced mode heating

Characteristics of continuous mode:

- ▶ Constant heating mode, does not follow the time programming.
- ▶ Anti-icing protection functions active.

Continuous operation in **Comfort mode**: automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit **disabled** (i.e. heating remains active, the said functions have no effect).

### Antifreeze protection mode

Protection mode  maintains the room temperature at the (configurable) Antifreeze protection level.

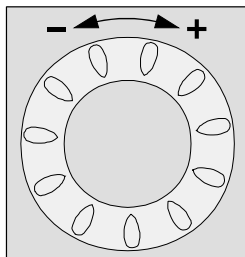
Characteristics of protection mode:

- ▶ Constant heating mode at the anti-icing protection setpoint.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.


## 3.4 MODIFYING THE ROOM TEMPERATURE SETPOINT

Knob B (fig. 3.1 p. 10)


Figure 3.4 Knob



### Modifying the comfort setpoint

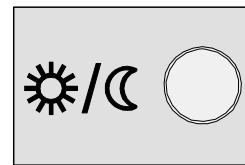
To change the Comfort setpoint  turn the knob to increase the setpoint (CW) or reduce it (CCW). Confirm by pressing A (Heating mode selection / Confirm settings) (3.1 p. 10).

### Modifying the reduced setpoint

The reduced setpoint  can only be modified in programming mode on a QAA75.611 room unit, as described in par. 2.4 p. 8.

## 3.5 OCCUPANCY BUTTON

Figure 3.5 Occupancy button



If, during heating in comfort mode, the rooms are unoccupied for a period of time, you can press the occupancy key C (fig. 3.1 p. 10) to switch to reduced mode and save heating costs. When the rooms are occupied again, simply press the key once more to restore normal comfort mode heating. In the same way, press the key once when in reduced mode to switch to comfort mode and press it again to restore reduced mode.



The occupancy key is only active in **automatic mode**. The setting applied by pressing the occupancy key remains active until the next change in heating mode set in the time program. For example, if you press the occupancy key while the system is in comfort mode, thus switching to reduced mode, the system will automatically return to comfort mode the next time the time program switches from reduced to comfort mode.

## 4 PARAMETERS AND SETTINGS

Par. 4.1 p. 11 describes how to set parameters with the user interface of the QAA75.611 room unit, and illustrates an example configuration procedure graphically.

The following paragraphs detail the main user-configurable parameters.

### 4.1 PROGRAMMING

Settings which cannot be done directly with the room unit's knob and keys are done by means of programming. To display and modify the parameters of the system controller, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the menu, then press **OK** to display it.
4. Turn the knob to select the parameter you wish to view/modify; the display shows its current value.
5. To modify the value, press **OK**; the displayed value will start flashing.
  - Turn the knob to select the desired value.

- Press OK to confirm it, or
- Press ESC to abort the change.

6. If you want to view and modify other parameters in the same menu, turn the knob to display them; modify them as explained in point 5.
7. Once you have finished viewing and modifying the parameters of a given menu, press **ESC** to go back to the list of menus.
8. To access other menus, repeat steps 3 to 7 for each menu in question.
9. Once you have finished working with the menus, press **ESC** to return to the start screen.

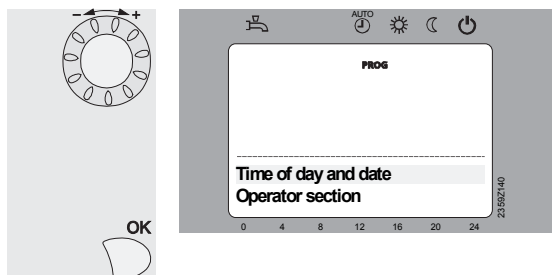


If you do nothing for 8 minutes the device will automatically return to its start screen.

We illustrate below a sample setting: setting the time.

### Select the "Time of day and date" menu

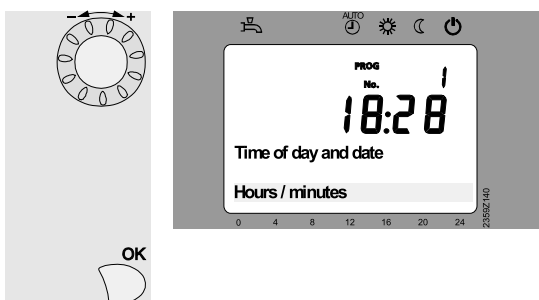
**Figure 4.1** The display shows the time/date setting menu



Press **OK** (in the start menu), the display will show a list of menus. Turn the knob until the **Time of day and date** menu displays. Press **OK** to access the menu.

### Select parameter "Hours / minutes"

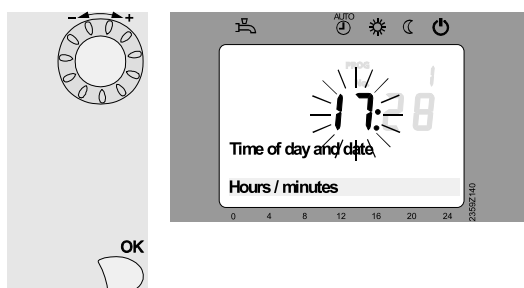
**Figure 4.2** The display shows the hours and minutes for modification



The bottom of the screen displays the first parameter in the **Time of day and date** menu. Turn the knob until the parameter **Hours / minutes** displays. Press **OK** to select the parameter.

### Modify the hour

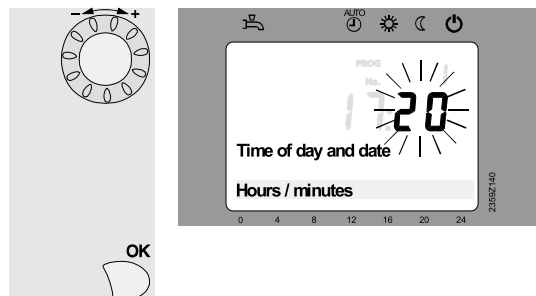
**Figure 4.3** The display shows the hours, flashing



The display shows the hours, flashing. Turn the knob to set the hours. Press **OK** to confirm.

### Modify the minutes

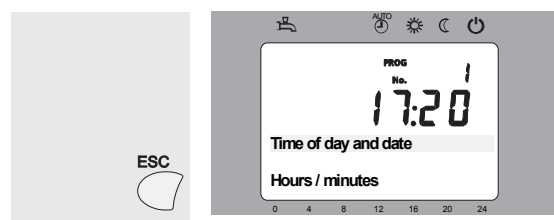
**Figure 4.4** The display shows the minutes, flashing



The display shows the minutes, flashing. Turn the knob to set the minutes. Press **OK** to confirm.

### Hours and minutes modified

**Figure 4.5** The display shows the set time



The settings have been saved. The display stops flashing. Turn the knob to display the **Day / month and Year** parameters; to set them, proceed in the same way. After making the settings, press **ESC** once to return to the list of menus, and again to go back to the start screen.

## 4.2 LANGUAGE

To set the language, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Operator section** menu.
4. Press **OK** to access the menu.
5. Parameter 20 (**Language**) displays; to adjust it:
  - press **OK**, the current language, at the bottom right of the screen, starts flashing;
  - turn the knob to select your language;
  - press **OK** to confirm; the new language selection displays without flashing.
6. Press **ESC** once to return to the list of menus, and again to return to the start screen.

## 4.3 DATE AND TIME

The controller has an annual clock with the following main characteristics:

- Automatic leap year adjustment.

- Automatic switching between summer and winter time.
- Backup charge to handle temporary power faults.



To use the time programs and holiday programs, the date and time must be set correctly.



The switch from winter to summer time happens at 02:00 of the last Sunday of March (at 02:00 the timer is automatically set to 03:00); the switch from summer to winter time happens at 03:00 of the last Sunday of October (at 03:00 the timer is set back to 02:00).

To set the date and time, proceed as follows (this procedure is also given as an example with illustrations in par. 4.1 p. 17):

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Time of day and date** menu.
4. Press **OK** to access the menu.
5. Parameter **1 (Hours / minutes)** displays; to adjust it:
  - press **OK**, the two leftmost digits (hours) start flashing;
  - turn the knob to set the hours;
  - press **OK** to confirm; the new value of the hours displays without flashing, while the two right most digits (minutes) start flashing;
  - turn the knob to set the minutes;
  - press **OK** to confirm; the new time (hours and minutes) displays without flashing
6. Turn the knob to select parameter **2 (Day / month)**; to adjust it:
  - press **OK**, the two leftmost digits (month) start flashing;
  - turn the knob to set the month;
  - press **OK** to confirm; the new value of the month displays without flashing, while the two right most digits (day) start flashing;
  - turn the knob to set the day;
  - press **OK** to confirm; the new month and day display without flashing.
7. Turn the knob to select parameter **3 (Year)**; to adjust it:
  - press **OK**, the year digits start flashing;
  - turn the knob to set the year;
  - press **OK** to confirm; the new year value displays without flashing.

Once you have set the date and time, press **ESC** to return to the list of menus; you can now make other settings, or press **ESC** again to go back to the start screen.

Table 4.1 p. 13 lists the codes of the parameters used to set the date and time.

**Table 4.1** Date and time setting parameter codes

| Parameter code | Description of parameter |
|----------------|--------------------------|
| 1              | Hours/minutes<br>HH:MM   |
| 2              | Day/month<br>DD:MM       |
| 3              | Year<br>YYYY             |

## 4.4 TIME PROGRAMS

The heating circuits (or zones) and DHW system (if present) each have their own dedicated weekly time program.

As described in par. 2.3 p. 7 and 3.3 p. 10, the time program

associated with a given heating circuit is activated when **automatic** mode is selected for the circuit in question.

For the DHW system, you can activate/deactivate the time program, but this can only be done by a TAC. The factory setting has this time program inactive (DHW comfort setpoint maintained all 24 hours). Even modifications to the DHW reduced setpoint (factory set to 45.0 °C) must be done by the TAC.

Each time program enables you to set up to 3 periods of operation with the comfort setpoint for each day of the week; outside these periods, the system maintains the reduced setpoint. The factory setting for the heating circuit time programs provides, for each day of the week, a period using the comfort setpoint from **6:00 to 22:00**; the DHW time program (when activated by the TAC) has two periods with the comfort setpoint: from **00:00 to 5:00** and **17:00 to 21:00**.

These settings can be changed as follows:

### Heating circuit 1 time program

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Time prog heating/cooling 1** menu.
4. Press **OK** to access the menu.
5. Parameter **500 (Preselection)** displays, the value of which indicates the days of the week for which the following settings will apply; you can set the values:
  - Mo - Su** to set all days of the week to the same settings
  - Mo - Fr** to set all working days to the same settings
  - Sa - Su** to set the weekend days to the same settings
  - Mo, Tu, We, Th, Fr, Sa, Su** to program the days individually.

To modify the initial setting (**Mo - Su**):

  - press **OK**, the parameter's value will start flashing;
  - turn the knob to set the value;
  - press **OK** to confirm; the new preselection value will display without flashing at the bottom right; the following settings will apply to the days in question
6. Turn the knob to select parameter **501 (1st period on)** the value of which indicates the start time (hours and minutes) of the first daily period with the comfort setpoint; to modify this value:
  - press **OK**, the parameter's value will start flashing;
  - turn the knob to set the value;
  - press **OK** to confirm; the new value displays without flashing.
7. Turn the knob to select parameter **502 (1st period off)** the value of which indicates the end time (hours and minutes) of the first daily period with the comfort setpoint; to modify this value:
  - press **OK**, the parameter's value will start flashing;
  - turn the knob to set the value;
  - press **OK** to confirm; the new value displays without flashing.
8. If you need to set a second daily period with the comfort setpoint, proceed as indicated in steps 6 and 7 to set the value of parameters **503 (2nd period on)** and **504 (2nd period off)**.
9. If you need to set a third daily period with the comfort setpoint, proceed as indicated in steps 6 and 7 to set the value of parameters **505 (3rd period on)** and **506 (3rd period off)**.
10. If you need to program other days of the week, turn the knob to select **500 (Preselection)** again and proceed as indicated in step 5 to set a new value; then repeat steps 6 and 7 as many times as required to set one or more daily periods with

the comfort setpoint for the days of the week in question.



An inactive period is indicated by hyphens ( - :- - ) in place of the time (hours and minutes) for the respective **"Period on"** and **"Period off"** parameters. To set a parameter to the disabled setting, turn the knob clockwise until the hyphens display.



You can also copy all programming of a given preselection of days of the week, excepting **Mo - Su**, to specific days of the week, using parameter **515 (Copy)**:

- set parameter **500 (Preselection)** to the days of the week you wish to copy, as described in steps 1 – 5 above.
- turn the knob to select parameter **515 (Copy)**
- press **OK**, the parameter's value will start flashing
- turn the knob to set the day of the week to copy the values from the preselected days of the week to.
- press **OK** to confirm; all the programming of the preselected day/s of the week will be copied to that day.

Once you have finished setting the time program parameters for heating circuit 1, press **ESC** to return to the list of menus; you can

now configure other time programs, or press **ESC** again to return to the start screen.

### Heating circuit 2 and 3 time programs, and DHW system time program (if present)

These programs are set in the same way as for heating circuit 1, with the following differences:

- In step 3, select the menu:

- **Time prog heating/cooling 2**
- **Time prog heating/cooling 3**
- **Time program 4/DHW**

depending on the time program you wish to set.

- For the rest of the procedure, refer to table 4.2 p. 14 for the parameter codes.



if the **Time program 4/DHW** is not displayed, this means that the DHW time program is deactivated (factory setting, comfort setpoint maintained throughout 24 hours); contact the TAC to have it activated if necessary.

Once you have finished setting the time program parameters, press **ESC** to return to the list of menus; you can now configure other time programs, or press **ESC** again to go back to the start screen.

**Table 4.2** Time program parameter codes

| Parameter code |     |     |       | Description of parameter   |
|----------------|-----|-----|-------|--|
| HC1            | HC2 | HC3 | 4/DHW |  |
| 500            | 520 | 540 | 560   | Preselection<br>Mo – Su / Mo – Fr / Sa – Su / Mo / Tu / We / Th / Fr / Sa / Su |
| 501            | 521 | 541 | 561   | 1st period On<br>HH:MM [factory setting: HC1, HC2, HC3: 06:00; DHW: 00:00]     |
| 502            | 522 | 542 | 562   | 1st period Off<br>HH:MM [factory setting: HC1, HC2, HC3: 22:00; DHW: 05:00]    |
| 503            | 523 | 543 | 563   | 2nd period On<br>HH:MM [factory setting: HC1, HC2, HC3: - :- -; DHW: 17:00]    |
| 504            | 524 | 544 | 564   | 2nd period Off<br>HH:MM [factory setting: HC1, HC2, HC3: - :- -; DHW: 21:00]   |
| 505            | 525 | 545 | 565   | 3rd period On<br>HH:MM [factory setting: HC1, HC2, HC3, DHW: - :- -]           |
| 506            | 526 | 546 | 566   | 3rd period Off<br>HH:MM [factory setting: HC1, HC2, HC3, DHW: - :- -]          |
| 515            | 535 | 555 | 575   | Copy<br>Mo / Tu / We / Th / Fr / Sa / Su                                       |

## 4.5 HOLIDAY PROGRAMS

Each heating circuit (or zone) also has its own holiday program. As for time programming, each holiday program is active only when the heating circuit in question is running in **automatic** mode; refer to par. 2.3 p. 7 and 3.3 p. 10.

Each holiday program allows you to set up to 8 periods of absence over the year; for each period you can specify whether the room units should maintain the reduced or anti-icing protection setpoints.

To set the holiday programs, proceed as follows:

### Heating circuit 1 holiday program

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Holidays zone 1** menu.
4. Press **OK** to access the menu.
5. Parameter **641 (Preselection)** displays, the value of which indicates the period of absence for which the following settings will apply; you can set the values:

**Period 1 / Period 2 / ... / Period 8.**

To modify the initial setting (**Period 1**):

- press **OK**, the parameter's value will start flashing;
- turn the knob to set the value;
- press **OK** to confirm; the new preselection value will display without flashing at the bottom right; the following settings will apply to the period in question

6. Turn the knob to select parameter **642 (Period 1: Start)** the value of which indicates the date (day and month) on which the first period of absence starts; to modify this value:

- press **OK**, the two leftmost digits (month) start flashing;
- turn the knob to set the month;
- press **OK** to confirm; the new value of the month displays without flashing, while the two leftmost digits (day) start flashing;
- turn the knob to set the day;
- press **OK** to confirm; the date displays without flashing.

7. Turn the knob to select parameter **643 (Period 1: End)** the value of which indicates the date (day and month) on which the first period of absence ends; to modify this value:

- press **OK**, the two leftmost digits (month) start flashing;



- turn the knob to set the month;
  - press **OK** to confirm; the new value of the month displays without flashing, while the two leftmost digits (day) start flashing;
  - turn the knob to set the day;
  - press **OK** to confirm; the date displays without flashing.
8. Turn the knob to select parameter **648 (Operating level)** the value of which indicates the room setpoint to be maintained during the period in question; to change the setting:
- press **OK**, the parameter's value will start flashing;
  - turn the knob to set the value:
    - **Protection** (antifreeze protection setpoint) or:
    - **Reduced** (reduced setpoint);
  - press **OK** to confirm; the new value displays without flashing.
9. If you need to set other annual periods of absence, repeat steps 5, 6, 7 and 8 as many times as needed, with a different Period of absence in step 5 each time (**Period 2**, **Period 3**, etc.)



An inactive period of absence is indicated by hyphens ( - - - ) in place of the date (day and month) for the respective "**Period n: Start**" and "**Period n: End**" parameters. To set a parameter to the disabled setting, turn the knob counterclockwise until the hyphens display.

Once you have finished setting the holiday program parameters for heating circuit 1, press **ESC** to return to the list of menus; you can now configure other holiday programs, or press **ESC** again to go back to the start screen.

### Heating circuit 2 and 3 holiday programs

These programs are set in the same way as for heating circuit 1, with the following differences:

- In step 3, select the menu:
  - **Holidays zone 2**
  - **Holidays zone 3**

depending on the holiday program you wish to set.

- For the rest of the procedure, refer to table 4.3 p. 15 for the parameter codes.

Once you have finished setting the holiday program parameters, press **ESC** to go back to the list of menus; you can now configure other holiday programs, or press **ESC** again to return to the start screen.

**Table 4.3** Holiday program parameter codes

| Parameter code |     |     | Description of parameter                                     |
|----------------|-----|-----|--|
| HC1            | HC2 | HC3 |  |
| 641            | 651 | 661 | Preselection<br>Period 1 / Period 2 / ... / Period 8.        |
| 642            | 652 | 662 | Period n: Start (n: 1 – 8)<br>DD:MM [factory setting: - - -] |
| 643            | 653 | 663 | Period n: End (n: 1 – 8)<br>DD:MM [factory setting: - - -]   |
| 648            | 658 | 668 | Operating level<br>Protection / Reduced                      |



There is no holiday program for DHW production. If you intend to be away for a long time, you can:

- set ECO mode for the DHW system; the system will produce DHW at the DHW reduced setpoint temperature over the 24 hours;
- or:
- deactivate the DHW system; no DHW will be

produced.

Both these settings can be made by pressing the dedicated button on the QAA75.611 room unit, as described in par. 2.6 p. 8.



In **ECO** mode, if the legionella function is enabled (see par. 4.7 p. 17) the system will run regular thermal disinfection cycles.



Remember to restore normal operation when back.

## 4.6 HEATING CIRCUIT SETTINGS

Each heating circuit (or zone) has some own menu in which you can set its operating parameters.

The most commonly used parameters operating (mode and comfort setpoint) can also be set directly, as described in par.2.3 p. 7, 3.3 p. 10, 2.4 p. 8 and 3.4 p. 11; par.2.4 p. 8 also describes how to set the reduced setpoint in programming mode.

**This paragraph is thus only of interest to the end user if he wishes to make special settings; in case of doubt, contact the TAC.**

To access the settings menu, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK**; this displays the list of menus.
3. Turn the knob to select the menu:
  - **Heating circuit 1**
  - **Heating circuit 2**
  - **Heating circuit 3**

depending on which circuit you wish to configure.

4. Press **OK** to access the menu.
5. Turn the knob to select the parameter, with reference to Table 4.4 p. 16.
6. Press **OK**, the parameter's value will start flashing
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. If you wish to set other parameters in the same menu, repeat steps 5, 6, 7 and 8 for each parameter in question.

Once you have finished setting the parameters for a given heating circuit, press **ESC** to return to the list of menus; you can now configure other heating circuits, or press **ESC** again to return to the start screen.

**Table 4.4** Heating circuit parameter codes

| Parameter code |      |      | Description of parameter  |
|----------------|------|------|---|
| HC1            | HC2  | HC3  |   |
| 700            | 1000 | 1300 | Operating mode<br>Protection / Automatic / Reduced / Comfort  |
| 710            | 1010 | 1310 | Comfort setpoint (Ambient comfort setpoint)<br>C.C. °C [factory setting: HC1, HC2, HC3: 21.0 °C]              |
| 712            | 1012 | 1312 | Reduced setpoint (Ambient reduced setpoint)<br>R.R. °C [factory setting: HC1, HC2, HC3: 18.0 °C]              |
| 714            | 1014 | 1314 | Protection setpoint (Ambient frost protection setpoint)<br>P.P.P. °C [factory setting: HC1, HC2, HC3: 7.0 °C] |
| 720            | 1020 | 1320 | Heating curve slope<br>0.10 – 4.00 [factory setting: HC1, HC2: 0.76; HC3: 1.26]                               |
| 730            | 1030 | 1330 | Summer/winter heating limit<br>L.L.L. °C [factory setting: 18.0 °C]   |
| 742            | 1042 | 1342 | Flow temp setpoint room stat<br>--- °C ( <b>Do not change this setting</b> )                                  |

We explain the parameters listed in Table 4.4 p. 16 below

### Comfort, reduced and frost protection modes and setpoints

These parameters are detailed in par. 2.3 p. 7 and 3.3 p. 10, 2.4 p. 8 and 3.4 p. 11.



Directly setting the operating mode and Comfort setpoint is exactly the same as setting them in programming mode.

### Heating curve slope

Each heating circuit (or zone) has its own heating curve. The heating curve enables the system to modify the outlet temperature as a function of the external temperature, adapting the thermal power delivered to the terminals (radiators, fan coil units, floor radiators, etc.) to the building's actual heating requirements. It follows that the outlet temperature will be higher for lower external temperatures, while it will be lower for higher external temperatures.

This technique has considerable advantages compared to constant outlet temperature solutions:

- room comfort is greatly improved thanks to a delivery of thermal power which is commensurate to need, and hence more constant; this avoids alternating periods of excessive heating with periods of no heating at all, which results in oscillating room temperature.
- The system is more efficient thanks to the higher efficiency of the K18 heat pump and lower thermal dispersion, both due to the lower water temperature delivered during the greater part of the cold season; the result is considerable cost savings.

Depending on the type of terminal and their size, one must set the correct heating curve as a function of the slope parameter. When first starting up the system, the technician set this parameter to a value suited to the type and size of terminals for each circuit.

However, after a first period of operation in variable climate conditions, you may remark that the room temperature is not constant with variations in the external temperature; in particular, two cases may arise:

1. the room temperature is **lower** when the external temperature is **lower**
2. the room temperature is **higher** when the external temperature is **lower**



to avoid coming to a hasty conclusion, this assessment should be based on several observations, as follows:

- external temperature stable for at least two days (i.e., do not make observations while the weather is changing);
- at the same time of day, in heating mode with the comfort setpoint active for at least the last several hours;
- with the same comfort setpoint value;
- without using, at least in the 24 hours previous to the observation, other adjusting equipment, such as manual or thermostatic valves on radiators, or zone thermostats with or without timers: the valves must be kept completely open and the zone thermostat settings must be at least a few degrees higher than the comfort setpoint.

If the assessment confirms that the situation corresponds to case **1.**, you must **increase** the slope of the heating curve, so as to increase thermal power delivery when the external temperature is low.

If, on the other hand, the situation corresponds to case **2.**, you must **decrease** the Heating curve slope, to reduce thermal power delivery when the external temperature is low.



We recommend making gradual adjustments, so as to avoid major changes to the setting; for example, when using a moderate slope heating curve (1.26), to obtain a variation of 1 °C in the room temperature, the slope must be varied by:

- 0.08 at an external temperature of -5 °C
- 0.06 at an external temperature of -10 °C
- 0.04 at an external temperature of -20 °C

For example, if you find that at -10 °C the room temperature is 1 °C lower than that obtained in mild climatic conditions, you should increase the slope by 0.06.

If, on the other hand, you find that at -5 °C the room temperature is 2 °C higher than that obtained in mild climatic conditions, decrease the slope by 0.16.

Furthermore, after each change in the setting, let the system stabilise for 1-2 days to assess its effect.

### Summer/winter heating limit

For each heating circuit (or zone), a parameter is available to define the external temperature above which the heating system is automatically deactivated and below which it is activated.

- Increasing the value
  - Brings forward activation of the heating system
  - Delays deactivation of the heating system
- Decreasing the value
  - Delays activation of the heating system
  - Brings forward deactivation of the heating system





The external temperature in question is not that measured at a given time, but rather a value filtered to account for the building's thermal inertia.



Heating is not deactivated when the limit value is exceeded if the heating circuit is set to operate in continuous comfort mode.

### Flow temp setpoint room stat

For correct operation of the system, do not change the setting of this parameter from the factory value of - - °C (function disabled).

## 4.7 DHW SYSTEM SETTINGS

The DHW system can be activated and deactivated directly, as described in par.2.6 p. 8. You can do the same in programming mode; you can also modify the DHW comfort setpoint, i.e. the temperature maintained by the system in the DHW buffer tank.

To access the settings menu, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK**; this displays the list of menus.
3. Turn the knob to select the **DHW** menu.
4. Press **OK** to access the menu.
5. Turn the knob to select the parameter, with reference to Table 4.5 p. 17.
6. Press **OK**, the parameter's value will start flashing
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. If you wish to set other parameters in the same menu, repeat steps 5, 6, 7 and 8 for each parameter in question.

Once you have finished setting the parameters, press **ESC** to return to the list of menus; you can now configure parameters in other menus, or press **ESC** again to go back to the start screen.

**Table 4.5** DHW system parameter codes

| Parameter code | Description of parameter   |
|----------------|--|
| DHW            |  |
| 1600           | Operating mode (Operation mode) Off / On / Eco                         |
| 1610           | Nominal setpoint (Comfort setpoint) CC.C °C [factory setting: 55.0 °C] |

### Operating mode

This parameter is described in detail in par. 2.6 p. 8.



Directly setting the operating mode is exactly the same as setting them in programming mode.

### Comfort setpoint

The factory setting of 55 °C is suited to the vast majority of household installations.

If the DHW buffer tank is oversized, reducing this value to 50 °C will yield cost savings.

If, on the other hand, the tank is relatively small (not an advisable situation), you can increase the value. However, we recommend not exceeding a value of around 57-58 °C; doing so can impact the efficiency of DHW production.

### Activating the DHW time program and modifying the DHW reduced setpoint

As explained in par. 4.4 p. 13, these settings must be made by a TAC.

### Legionella protection

The DHW system includes an optional function which regularly runs a thermal cycle to prevent and eliminate legionella bacteria. The cycle consists in periodically raising the DHW temperature to a value which kills off the bacteria.

The function is disabled as the factory default, and must be enabled by a TAC if required.

Once enabled, the factory legionella cycle settings are given in Table 4.6 p. 17.

If necessary, the TAC can modify these settings.

**Table 4.6** Legionella disinfection cycle factory settings

| Disinfection cycle characteristics | Value    |
|------------------------------------|----------|
| Programming type                   | Weekly   |
| Day of execution                   | Thursday |
| Start time                         | 02:00    |
| Setpoint                           | 60 °C    |
| Setpoint hold time                 | 45 min   |





Be aware that, when the legionella cycle is activated, the DHW temperature in the buffer tank will be greater than normal for a few hours after the thermal disinfection cycle executes. **Risk of scalding!**

## 5 ERRORS

### 5.1 ERROR LIST

Table 5.1 p. 18 lists the error codes generated by the K18 system controller, along with their descriptions and priorities. The last column of the table lists measures for resolving the problem.

Errors are shown on the QAA75.611 room unit's display with the symbol . If you press (  ) when this symbol is displayed, the unit will display the code and description of the highest priority error. No other errors will be displayed until this error is resolved.

**Table 5.1** List of system controller errors for K18

| Code | Description            | Priority | See:           |
|------|------------------------|----------|----------------|
| 10   | Outside sensor B9      | 6        | Par. 5.2 p. 18 |
| 30   | Flow sensor 1 (1)      | 6        | Par. 5.2 p. 18 |
| 32   | Flow sensor 2 (6)      | 6        | Par. 5.2 p. 18 |
| 50   | DHW sensor 1 (2)       | 6        | Par. 5.2 p. 18 |
| 60   | Room sensor 1 (3)      | 6        | Par. 5.2 p. 18 |
| 65   | Room sensor 2 (4)      | 6        | Par. 5.2 p. 18 |
| 68   | Room sensor 3 (7)      | 6        | Par. 5.2 p. 18 |
| 83   | BSB, short-circuit (5) | 8        | Par. 5.2 p. 18 |
| 84   | BSB, address collision | 3        | Par. 5.2 p. 18 |
| 103  | Communication failure  | 3        | Par. 5.2 p. 18 |
| 127  | Legionella temp        | 6        | Par. 5.2 p. 18 |
| 324  | BX same sensors        | 3        | Par. 5.2 p. 18 |
| 330  | BX1 no function        | 3        | Par. 5.2 p. 18 |
| 331  | BX2 no function        | 3        | Par. 5.2 p. 18 |
| 332  | BX3 no function        | 3        | Par. 5.2 p. 18 |
| 333  | BX4 no function        | 3        | Par. 5.2 p. 18 |
| 441  | BX31 no function       | 3        | Par. 5.2 p. 18 |
| 442  | BX32 no function       | 3        | Par. 5.2 p. 18 |
| 443  | BX33 no function       | 3        | Par. 5.2 p. 18 |
| 444  | BX34 no function       | 3        | Par. 5.2 p. 18 |
| 173  | Active alarm 3 contact | 6        | Par. 5.3 p. 18 |

(1) Probe B1 (heating circuit 1 outlet sensor)

(2) Probe B3 (DHW production tank probe)

(3) Room unit 1

(4) Room unit 2

(5) Shown in this form in the error log, accessible to TAC. The information screen displays the text "**No connection**" without error code.

(6) Probe B12 (heating circuit 2 outlet sensor)

(7) Room unit 3

## 5.2 SYSTEM CONTROLLER ERROR HANDLING

Errors normally reset themselves automatically when their cause is eliminated; only in some cases need they be reset manually, as indicated below.

In the presence of error code **173 (Active alarm 3 contact)**, proceed as described in Paragraph 5.3 p. 18.

The presence of other error codes usually indicates fault of a sensor or system cable, or problems due to incorrect configuration of the system controller (e.g. due to an inexperienced attempt to modify the configuration).



Modifications to the settings described in this manual do NOT cause errors.

In any case, proceed as follows:

1. If, when you display the error information screen as described in par. 5.1 p. 17, the wording **Reset ?** displays at the bottom left, with **Yes** at the bottom right, press **OK** twice to attempt to reset the error.
2. If the operation described in point 1 is not applicable (the error information screen does not prompt for a reset) or does not resolve the problem, shut off electrical power to the system controller and then power it on again.
3. If the operation described in point 2 does not resolve the problem, note down the room unit error code and contact the TAC.

## 5.3 K18 ERROR HANDLING

In the presence of error code **173 (Active alarm 3 contact)**, which identifies a possible anomaly in the K18 unit:

1. Wait up to 20-30 minutes. In most cases, a K18 error is reported in response to transitory events which are automatically resolved by the unit's on-board controller.
2. If the error persists:

- check that the K18 unit is powered on (the display, visible via the transparent window, is on); if not, restore power;
- check that the gas supply is present; for example, check whether the check valve is closed.

3. If the problem is not resolved by correcting the possible absence of power or gas, actuate either the reset button on the right side of the K18 unit (near the transparent window that allows you to observe the 4-digit display, one green and three red, of the controller on the heat pump), or the button on the system controller enclosure, shown in Figure 1.1 p. 6.
4. In the case of the **K18 Hybrigas** unit, actuate also the reset button on the left side of the unit for 1-3 seconds (near the transparent window which allows you to observe the display of the integrated boiler module).






Do not press the button for longer as this activates test functions intended for the Technical Assistance Centre.




5. In the case of the **K18 Simplygas** unit and in the presence of the auxiliary boiler (e.g. a boiler) controlled by the K18 unit, verify whether any alarm message appears on the relative display or control panel. If so, consult the documentation provided by the manufacturer of the auxiliary boiler for the instructions on how to solve the problem.
6. If the error persists or recurs within a few minutes:
  - Take note of the error code or codes shown on the 4-digit display, one green and three red, on the right side of the K18 unit (see the note below for a description of the display mode of the codes).
  - If only code **E495** is present and the unit is of **K18 Simplygas** type, the only anomaly present concerns the auxiliary boiler it manages, whereas the K18 unit runs normally. Contact the Technical Assistance Centre **of the manufacturer of the auxiliary boiler**.
  - In all other cases, contact the Robur Technical

Assistance Centre (TAC); in the presence of code **E495** and the **K18 Hybrigas** unit, if possible, first also take note of the code of the anomaly shown on the display of the integrated boiler module on the left side of the unit.



The error codes display alternately with other information:

- outlet water temperature, preceded by a green  symbol
- inlet water temperature, preceded by a green  symbol
- difference between the two temperatures, preceded by a green  symbol

In the presence of at least one error code, the green symbols ,  and  flash and alternate with the error code, which also flashes.

If the display is showing this information, you may therefore have to wait a few seconds before the error codes are displayed. The error codes will flash like **u xxx** or **E xxx**; the letter **u** or **E** is green and **xxx** is a red three digit numerical code.

If multiple fault codes are present, they will be displayed in sequence: note down all the codes.



Report the codes of the anomaly displayed by the unit to the TAC for the latter to be able to provide possible instructions to try to autonomously resolve the problem; furthermore, if an intervention is required, the TAC can prepare this as best as possible and maximise its effectiveness.

For further information, refer to *Installation, use and maintenance manual* supplied with the specific K18 unit used.

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